



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

DIESEL TRADE THEORY N3

4 December 2023

This marking guideline consists of 5 pages.

SECTION A**QUESTION 1**

- 1.1 B
- 1.2 A
- 1.3 A
- 1.4 D
- 1.5 B
- 1.6 C
- 1.7 B
- 1.8 C
- 1.9 C
- 1.10 B

(10 × 1) **[10]**

QUESTION 2

- 2.1 False
- 2.2 True
- 2.3 True
- 2.4 False
- 2.5 False

(5 × 1) **[5]**

QUESTION 3

- 3.1 L
- 3.2 E
- 3.3 F
- 3.4 K
- 3.5 A
- 3.6 G
- 3.7 C
- 3.8 J
- 3.9 B
- 3.10 D

(10 × 1) **[10]**

QUESTION 4

- 4.1
- It is costly.
 - Mechanics must be trained to use the equipment.
 - Space is taken up that could be used for repair.
- (3)
- 4.2
- Impeller
 - Turbine
 - Housing
- (Any 2 x 1) (2)
- [5]**

TOTAL SECTION A: 30

SECTION B**QUESTION 5**

- 5.1
- Belt-driven
 - Chain-driven
 - Gear-driven
- (3)
- 5.2
- During operation the sodium is thrown to and fro, ✓ absorbing the heat from the head ✓ and transferring it to the stem and to the guides. ✓
- (3)
- 5.3
- Misfire
 - Excess fuel consumption
 - Overheating
 - Loss of pressure
- (Any 2 × 1) (2)
- 5.4
- Reduces driver fatigue and tyre wear
 - Engine torque matches the torque required by the wheels
 - Great reduction of wheel spin under bad conditions
- (3)
- 5.5
- Place a dial gauge on the diff housing or workbench. ✓ Ensure that the plunger of the gauge connects to the crown wheel tooth. ✓ Keep the pinion gear stationary ✓ and move the crown wheel to allow the tooth to push towards the plunger of the gauge and take a reading. ✓
- (4)
- [15]**

QUESTION 6

- 6.1
- Check the vehicle thoroughly before it is handed to the customer.
 - Preventative measures can prevent defective work.
 - All work done must be checked and be subjected to quality control.
 - A road test will reveal any defects.
 - A short run on the dynamometer will be advantageous.
- (5)

- 6.2 The rear clutch and brake band are locked.✓
The big sun gear is driving.✓
The carrier is locked.✓
The annulus is driven in a reverse direction.✓
The small sun gear and the small planetary gears rotate freely✓ (5)
- 6.3
- Power steering pump
 - Fluid reservoir
 - Fluid pipes
 - Drive belt
 - Power cylinder
 - Control valve
 - Pressure relieve valve (Any 6 × 1) (6)
- 6.4
- Valve response is quicker
 - Higher engine speeds are possible
 - Less parts in operation results in less noise and wear
 - Rubbing velocity between the cam lobe and the follower is higher
 - Permits each valve to open faster (Any 2 × 1) (2)
- 6.5
- Time, date and place of accident
 - Disruption of the injury
 - Was the injury accidental or negligence?
 - How serious is the injury?
 - Was there any witnesses and their details?
 - Was the injured hospitalised?
 - How did the injury happen? (7)
- [25]**

QUESTION 7

- 7.1 A – Valve seat
B – Valve guide
C – Hemispherical ball
D – Rocker (6)
- 7.2
- No fuel in tank
 - Dirty fuel filters
 - Dirty air filter
 - Blocked fuel lines
 - Air in the system (5)
- 7.3
- Incorrect valve clearance
 - Damage piston
 - Blown cylinder head gasket
 - Broken compression ring
 - Incorrect pump timing (5)

- 7.4
- Gears can be changed by using a brake band without interrupting the transmission torque.
 - The system is very light, compact, and quiet drive.
 - Very little wear takes place.
 - Various gear ratios and directions may be obtained by locking one element and driving another.
 - When helical gears are used more torque can be transmitted.
- (4)

7.5	7.5.1	10,63		
	7.5.2	15,36		
	7.5.3	66,15		
	7.5.4	68,53		
	7.5.5	70,95		
			(5 × 1)	(5)

- 7.6
- 7.6.1 $V_s = V_c(CR-1) \checkmark$
- $V_s = 35598(17 - 1) \checkmark$
- $V_s = 569568 \text{ mm}^3 \checkmark$
- (3)

- 7.6.2
- $$D = \left[\sqrt{\frac{V_s \times 4}{3.14(100)}} \right] \checkmark$$
- $$\left[\sqrt{\frac{2278260}{314,16}} \right] \checkmark$$
- $D = 8,515 \text{ cm} \checkmark \checkmark$
- (4)
- [30]**

TOTAL SECTION C: 30

GRAND TOTAL: 100